

**U.S. Department of the Interior  
U.S. Geological Survey**

Analytical results in digital format  
of rock samples from the Bethel and part of the  
Russian Mission 1 degree by 3 degree quadrangles, Alaska

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**Open-file Report 92-582B**

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This data set is for use on any DOS machine with a hard drive.

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**FILES ON DISKS (OF 92-582B)**

READ.	ME	This verbiage
TABWK1.	EXE	Compressed WK1 files of geochemical data and rock descriptions
TABLE1.	STP	Geochemical data in binary format for use with USGS STATPAC programs

## **INTRODUCTION**

This disk contains tables with analytical data for rock samples from the Bethel and southern part of the Russian Mission quadrangles, southwestern Alaska. A paper copy of the data tables and a sample locality map are included in Frost and others (1992). Chemical analyses, locations, and descriptions are presented here for 1773 rock samples collected in the Bethel and southern part of the the Russian Mission 1 degree x3 degree quadrangles, Alaska. A 1:250,000 scale geologic map has been published (Box and others, 1992).

## **USING THE FILES**

The file TABLE1.STP is in binary format and may be used directly with the USGS STATPAC programs (Van Trump and Meisch, 1977). The file TABWK1.EXE is a compressed file that contains two files when decompressed: TABLE1.WK1, which contains the same data as TABLE1.STP, but in WK1 format for use with spreadsheet programs, and TABLE2.WK1, which contains sample descriptions for the analysed samples. To use TABWK1.EXE, copy it to a hard disk and type TABWK1 (return). The files will decompress and be on the hard disk as TABLE1.WK1 and TABLE2.WK1. The compression program used is LHA v.2.12 (Yoshizaki, 1991).

## **METHODS OF STUDY**

### **Sample collection**

Rock samples were collected for this study either because they were visibly altered or to determine background geochemical values for given rock types. The analytical data is in table 1, brief sample descriptions are given in table 2. Samples in tables 1 and 2 with 7, 8 or 9 as the first digit followed by two letters and a 3 or 4 place sample number were collected from outcrops of bedrock. The first digit indicates the year the sample was collected (1987, 1988, or 1989, respectively) and the letters are the initials of the collector. CZ is James P. Calzia, GG is Gregory Grimsich, JM is John Murphy, ML is Elizabeth Moll-Stalcup, MM is Michael Mullen, PA is William A. Patton, SB is Stephen E. Box, TF is Thomas P. Frost, TM is Thomas E. Moore, SR is Sarah Roeske, and YB is Elizabeth Yount.

Samples in tables 1 and 2 in the format xxxx where the first digit is 7, 8 or 9 and the following digits represent sample numbers were, for the most part, composite samples of cobbles taken from stream drainages where stream sediment samples were collected. The sample numbers correspond to the stream sediment and heavy mineral concentrate samples from the same locations. Where xxxx samples are from bedrock outcrops, or are single grab samples, this is so indicated in table 2. Sample collectors for the xxxx format samples include: Elizabeth A. Bailey, Harlon A. Barton, Barrett Cieutat, Tracy Delaney, Karen Duttwieler-Kelly, Thomas P. Frost, Gregory K. Lee, and Scott Rose. Several samples are coded 7-FDxx. These are from the stibnite vein occurrence at Fisher Dome.

### **Sample Preparation**

Rock samples were crushed in a jaw crusher and then pulverized to minus 0.15 mm with ceramic plates.

### **Spectrographic method**

The samples were analyzed for 35 elements using a semiquantitative, direct-current arc emission spectrographic method (modification of Grimes and Marrazino, 1968).

Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence interval and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements iron, magnesium, calcium, and titanium are given in weight percent, all other elements are given in parts per million (micrograms per gram).

### **Chemical methods**

Mercury was determined by a continuous-flow, cold-vapor atomic absorption technique similar to that described by Kennedy and Crock (1987). Detection limit for the technique is 0.02 ppm.

Gold was determined by a flame atomic absorption technique (Meier, 1980). Detection limit for the technique is 50 ppb.

Most rock samples collected during 1987 (first digit 7 in sample number, column 1 in tables 1 and 2) were also analyzed by atomic absorption spectrophotometry for As, Bi, Cd, Sb, and Zn using the method of O'Leary and Viets (1986). Most samples collected during 1988 (first digit 8 in sample number, column 1 in table 3) were analyzed by an inductively coupled plasma (ICP) technique for the same five elements, but with lower detection limits (Crock and others, 1983). Samples collected in 1989 (first digit 9 in sample number, column 1, in table 3) were analyzed for the same five elements plus Ag, Cu, Mo, Pb, and Au by inductively coupled plasma atomic emission spectroscopy (Motooka, 1988). Some samples collected from 1987 and 1988 were also analyzed in 1990 by the 1989 protocol, these samples are obvious in table xx in that the elements determined are like those of the 1989 samples. Changes in the analytical techniques available at the U.S. Geological Survey's Branch of Geochemistry laboratory in Denver are responsible for the change from year to year.

### **DESCRIPTION OF TABLES**

Table 1 is contained in STATPAC format in the file TABLE1.STP and in .WK1 format in the compressed file TABWK1.EXE. Table 1 lists the results of the analyses for the samples.

In STATPAC format, the first line for each sample in Table 1 is an identifier line and lists the field number, the lab number, the latitude and longitude in degree, minutes and seconds, followed by the data row number. The identifier row for each sample is followed

by the analytical data. Columns 1-35 contain 35 element spectrographic analyses (in the order Ca, Fe, Mg, Na, P, Ti, Ag, As, Au, B, Ab, Be, Bi, Cd, Co, Cr, Cu, Ga, Ge, La, Mn, Mo, Nb, Ni, Pb, Sb, Sc, Sn, Sr, Th, V, W, Y, Zn, Zr). Column 36 contains the atomic absorption Hg values; column 37 contains atomic absorption Au values; columns 38-42 contain values for atomic absorption (Prefix "AA-" in the header) for As, Bi, Cd, Sb, and Zn (1987 samples). Columns 43-52 (suffix "-p") contain values for the same elements (Ag, Au, Cu, Mo, Pb were not determined with this method) determined by inductively coupled plasma (1988 samples). Columns 43-52 for samples which were analysed in 1989 or 1990 contain values for Ag, As, Au, Cd, Cu, Mo, Pb, Sb, and Zn (Motooka, 1988). Data for Fe, Ca, Mg, Na, Ti, and P are in percent, all others are reported in parts per million. For a given value, B indicates a determination for that element was not made, G that the value is greater than the detection limit, H indicates interference from some other element, L indicates the element was detected but no value was determined, and N indicates the element was not detected at the minimum detection limit. The last two columns of table 3 contain latitude and longitude in decimal degrees.

In .WK1 format, the first column in Table 1 is the row number, the second is the sample or field number, column 3 is the lab number, columns 4 and 5 are latitude and longitude in degrees, minutes, seconds, columns 6-56 are in the same order as in the .STP file (see preceding paragraph), and columns 57 and 58 are lat and long in decimal degrees.

Table 2 is contained in TABWK1.EXE and contains latitude and longitudes (in degrees, minutes, seconds) for all samples and brief descriptions for most samples, based on the field notes of the person who collected the sample. Data fields are separated by tabs.

## REFERENCES

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